



UAB17404.ST25.txt
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<110> Qi, Fengxia
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Chen, Ping

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<140> US 10/790,914

<141> 2004-03-02

<150> US 09/627,376

<151> 2000-07-28

<150> US 10/047,676

<151> 2002-01-14

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 35 40 45

Ala Asp Lys Leu Leu Leu Ala Ile Ser Gly Ile His Met Ser Phe Ser
 50 55 60

Glu Phe Gly Tyr Ala Leu Ser His Tyr Glu Glu Ser Asp Phe Phe Lys
 65 70 75 80

Arg Gly Asn Lys Leu Ser Glu Leu Tyr Val Gln Lys Asp Ile Lys Gly
 85 90 95

Leu Lys Lys Leu Leu Glu Phe Asn Asp Asn His Glu Val Phe Asp Val
 100 105 110

Tyr Asn Arg Leu Asn Lys Leu Val Ile Gln Val Thr Ile His Leu Leu
 115 120 125

Asp Thr Asp Tyr Ile Ile Ser Asp Asp Asp Lys Asn Phe Leu Thr Thr
 130 135 140

Tyr Leu Tyr Asn Ile Glu Glu Trp Thr Glu Tyr Glu Leu Tyr Ile Phe
 145 150 155 160

Gly Asn Thr Met Ser Ile Leu Ser Ser Asp Asp Leu Ile Phe Leu Gly
 165 170 175

Lys Ala Phe Val Glu Arg Asp Lys Leu Tyr Ile Ser Leu Pro Ser His
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185

190

Lys Lys Asn Ala Glu Leu Thr Phe Leu Asn Leu Ile Leu Ile Leu Leu
195 200 205

Glu Arg Lys Lys Leu Tyr Gln Ala Ile Tyr Phe Val Glu Asn Leu Glu
210 215 220

Lys Leu Leu Asn Tyr Gln Asp Met Phe Ala Ile Thr Phe Leu Lys Phe
225 230 235 240

Leu Lys Lys Ile Ile Thr Tyr Phe His Asp Lys Ser Val Asp Met Ser
245 250 255

Glu Leu Glu His Tyr Ile Asn Ile Val Glu Glu Ile Asn Pro Thr Ile
260 265 270

Ala Ser Ile Leu Lys Ser Asn Leu Asn Gln Leu Leu Ser Ser Phe Ser
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His

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<211> 65
<212> PRT
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<400> 5

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35 40 45

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50 55 60

Cys
65

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<213> Streptococcus mutans

<400> 6

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20 25 30
Gln Val Ser Asp Ser Pro Gly Thr His Ser Lys Val Gly Ser Phe Ser
35 40 45
Ile Cys Pro Pro Arg Lys Thr Ser Val Ser Phe Asn Ser Tyr Cys Cys
50 55 60

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<211> 990

<212> PRT

<213> Streptococcus mutans

<400> 7

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Glu Leu Leu His Asn Asp Pro Ile Phe Ala Glu Gly Val Tyr Leu Ala
35 40 45
Ser Pro Ser Leu Arg Ser Ser Ile Asn Lys Leu Glu Asn Gln Ile Ala
50 55 60
Ser Thr Lys Glu Lys Lys Asn Ala Lys Glu Thr Ile Phe Gln Tyr Tyr
65 70 75 80
Ala Arg Tyr Asn Thr Arg Ser Thr Pro Phe Gly Leu Phe Ser Ser Ile
85 90 95
Gly Ile Gly Gly Phe Ser Asn His Pro Arg Lys Glu Lys Ser Cys Tyr
100 105 110
Glu Lys Ser Val Asn Val Asp Leu Phe Trp Ala Tyr Lys Val Ala Asp
115 120 125
Lys Leu Glu Ser Met Pro Glu Ile Leu Asn Thr Leu Lys Val Val Ala
130 135 140
Asn Asn Ala Leu Gln Lys Ser Asn Asp Phe Trp Leu Leu Asp Thr Arg
145 150 155 160

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Ser His Phe Gly Leu Met Asn Ser Arg Ser Asp Ile Arg Glu Asp Ile
165 170 175

Thr Val Lys Ser Asn Gln Leu Ile Asp Tyr Val Ile Asn Cys Thr Glu
180 185 190

Glu Pro Ile Ser Tyr Gln Thr Leu Ile Asp Asp Ile Ala Glu Lys Phe
195 200 205

Ser Gln Ser Ser Asp Asp Val Lys Glu Tyr Leu Gln Thr Leu Ile Lys
210 215 220

Glu Glu Phe Leu Ile Thr Glu Leu Lys Phe Ser Leu Ile Asp Asp Asn
225 230 235 240

Pro Leu Asp Trp Phe Ile Asn Ile Leu Glu Arg Asp Gln Asn Asn Ser
245 250 255

Glu Leu Leu Glu Lys Leu Thr Glu Ile Lys Ala Met Ile Gln Asp Tyr
260 265 270

Thr Asp Arg Asn Ile Gly Glu Gly Asn Asn Ser Ile Leu Ala Leu Glu
275 280 285

Asn Lys Met Ser Gln Ile Val Lys Ala Asn Ala Tyr Leu Arg Val Asp
290 295 300

Leu Tyr Asp His Ala Glu Leu Lys Leu Ala Gln His Thr Lys Ser Ser
305 310 315 320

Leu Gln Asn Ile Leu Lys Val Leu Ser Ser Phe Ser Ser Ala Val Asn
325 330 335

Ser Gln Lys Glu Ile Lys Asn Tyr His Glu Lys Phe Ile Ala Arg Tyr
340 345 350

Gly Tyr Glu Gln Leu Val Pro Leu Gln Leu Leu Leu Asn Ser Thr Ser
355 360 365

Gly Leu Gly Phe Pro Lys Gly Tyr Ser Gln Thr Glu Val Ser Lys Gln
370 375 380

Asn Asn Glu Asp Ser Lys Asn Gln Lys Ile Ile Glu Phe Leu Gln Arg
385 390 395 400

Lys Phe Glu Lys Ala Leu Arg Asp Gly Lys Glu Ile Ile Leu Ser Asp
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405

410

415

Asp Asp Leu Lys Asp Leu Asn Phe Asp Thr Glu Gln Gln Ile Ser Gly
 420 425 430
 Glu Leu Tyr Cys Phe Tyr Asn Phe Lys Ser Lys Lys Leu Glu Val Ser
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 Ser Leu Gly Val Ser Gln Met Leu Gly Asn Thr Phe Gly Arg Phe His
 450 455 460
 Ser Lys Leu Pro Asn Thr Ile Val Thr Lys Asn Val Asn Lys Thr Lys
 465 470 475 480
 Glu Ile Phe Thr Glu Ala Tyr Pro Asn Thr Ile Ile Thr Gln Leu Asn
 485 490 495
 Glu Val Pro Tyr Phe Gly Arg Gly Gly Asn Ile Met Ile Ser Asn Ser
 500 505 510
 Leu Lys Ser His Gln Leu Glu Leu Arg Asn Tyr Thr Thr Lys Lys Glu
 515 520 525
 Met Ser Ile Asn Asp Ile Tyr Val Arg Ala Thr Ser Glu Glu Leu Tyr
 530 535 540
 Phe Tyr Ser Lys Lys Tyr Glu Lys Arg Val Ile Phe Val Met Asn Asn
 545 550 555 560
 Met Phe Asn Tyr Ile Asn Gly Ser Lys Leu Leu Arg Phe Leu Leu Glu
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 Val Ser Asn Ser Asp Phe Gln Asn Ile Thr Pro Ile Thr Leu Gly Ser
 580 585 590
 Leu Asp Ser Tyr Asn His Val Pro Ala Ile Ile Tyr Lys Asp Ile Ile
 595 600 605
 Ile Lys Pro Glu Thr Trp Asn Ile Arg Lys Ser Glu Ala Lys Thr Leu
 610 615 620
 Asp Ser Leu Lys Asn Trp Leu Thr Asn Asn Asn Val Pro Pro Phe Val
 625 630 635 640
 Arg Met Lys Tyr Thr Asp Gln Ile Ile Tyr Leu Asp Leu Ser Arg Thr
 645 650 655

Ile Asp Leu Thr Met Leu Phe Gln Ser Ile Lys Lys His Ser Phe Ile
660 665 670

Gln Leu Leu Asp Val His Ser Val Cys Thr Asn Asp Thr Glu Ile Leu
675 680 685

Glu Leu Val Val Pro Phe Thr Arg Ser Asp Val Asn Ala His Gln Ile
690 695 700

Tyr His Tyr Ala Gln Asn Ile Tyr Thr Leu Glu Asp Ser Gly Ser Lys
705 710 715 720

Glu Lys Tyr Phe Tyr Ala Lys Ile Tyr Val Asn Lys Gln Arg Gln Thr
725 730 735

Ser Phe Leu Gln Lys Glu Tyr Pro Leu Leu Lys Tyr Leu Lys Leu
740 745 750

Pro Glu Asn Leu Gln Trp Phe Tyr Ile Arg Tyr Lys Asp Asp Gly Lys
755 760 765

Asp Ser Ile Arg Leu Arg Ile Arg Tyr Val Glu Asp Lys Gln Leu Val
770 775 780

Gln Leu Tyr Ser Arg Phe Ile Glu Trp Ala Thr Lys Ala Arg Lys Asn
785 790 795 800

Ile Gln Ile Ser Gly Tyr Glu Ile Ser Glu Tyr Ile Pro Glu Ser Ala
805 810 815

Arg Tyr Gly Gly Lys Lys Tyr Ser Ser Ile Ile His Ser Phe Phe Tyr
820 825 830

Tyr Asp Ser Ile Leu Asp Leu Leu Leu Gln Lys Lys Ala Glu Gln Thr
835 840 845

Ile Glu Val Arg Thr Ser Leu Ser Ile Ile Arg Met Phe Leu Met Met
850 855 860

Lys Leu Ser Leu Gln Asp Gln Gln Lys Leu Ile Lys Asn Leu Phe Asp
865 870 875 880

Gly Lys His Lys Leu Lys Tyr Glu Lys Glu Tyr His Asn Ser Ile Ser
885 890 895

Leu Leu Leu Asp Asn Leu Cys Thr Lys Asn Gln Thr Asp Glu Ala Asp
900 905 910

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Ile Phe Cys Val Met Asn Met Lys Lys Ile Thr Glu Lys Ile Ser Ser
915 920 925

Val Leu Lys Gln Lys Asp Leu Thr Thr Asp Trp Gln Arg Ile Leu Gly
930 935 940

Ser Leu Ile His Met Arg Cys Asn Arg Val Tyr Gly Ile Asn Ser Glu
945 950 955 960

Leu Glu Arg Lys Thr Met Phe Ile Val Asp Lys Val Ile Asn Ser Lys
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Arg Tyr Thr Asp Met Phe Leu Glu Val Gly Asn Glu Thr Lys
980 985 990

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<400> 8

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Gln Thr Tyr Leu Phe Asp Tyr Gln Glu Ile Leu Lys Lys Val Ser Gln
20 25 30

Ala Lys Gln Thr Asp Phe Trp Asn Leu Leu Ser Leu Ser Ser Gly Ile
35 40 45

Thr Ser Leu Leu Ile Phe Tyr Gln Glu Tyr Glu Asn Leu Glu Gly Val
50 55 60

Asn Leu Lys Gln Gln Lys Gln Ser Leu Ile Gly Leu Ile Ser His Tyr
65 70 75 80

Ile Asn Gln Ile Ala Glu Lys Ser Ser Leu Phe Asp Gly Leu Ala Gly
85 90 95

Val Gly Phe Ala Ile Asn Tyr Ile Ser Asn Asn Gly Lys Tyr Tyr Gln
100 105 110

Lys Leu Leu Glu Gln Ile Asp Asn Arg Leu Arg Gln Asn Ile Glu Arg
115 120 125

Asn Leu Val Asn Tyr Lys Asn Glu Glu Tyr Ala Asn Pro Met Asn Tyr
130 135 140

UAB17404.ST25.txt

Asp Val Val Ser Gly Asn Ala Gly Val Ala Arg Tyr Leu Met Glu Arg
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 Glu Ser Ser Glu Asp Trp Arg Ile Val Glu Met Ile Leu Glu Thr Phe
 165 170 175
 Tyr Lys Ala Leu Glu Gln Gly Trp Arg Val Gln Ser Lys Tyr Gln Phe
 180 185 190
 Leu Glu Ser Glu Lys Gln Tyr Tyr Leu Glu Gly Asn Ile Asn Phe Gly
 195 200 205
 Leu Ala His Gly Ile Leu Gly Pro Ala Thr Ile Met Ala Leu Tyr Gln
 210 215 220
 Arg Arg Glu Pro Gln Asn Thr Arg Asn Ala Glu Lys Leu Gln Glu Thr
 225 230 235 240
 Tyr Arg Leu Ile Lys Arg Tyr Ala Gln Val Arg Asp Glu Gly Leu Arg
 245 250 255
 Trp Pro Ile Arg Tyr Asp Leu Phe Arg Lys Glu Gly Ser Phe Ile Leu
 260 265 270
 Arg Asn Gly Trp Cys Tyr Gly Glu Asn Gly Ile Tyr Asn Thr Leu Phe
 275 280 285
 Leu Met Gly Lys Val Leu Ser Asn Gln Glu Ile Cys Glu Thr Ala Gln
 290 295 300
 Lys Val Ile Pro Ser Ile Ile Lys Asp Asp Tyr Glu Lys Met Glu Ser
 305 310 315 320
 Pro Thr Phe Cys His Gly Phe Ala Gly Lys Ala Asn Phe Phe Leu Leu
 325 330 335
 Gln Tyr Gln Arg Thr Lys Glu Ser Ile Phe Leu Val Lys Ala Glu Glu
 340 345 350
 Glu Ile Asp Lys Ile Leu Ile Val Tyr Asn Ser Glu Asn Met Phe Gly
 355 360 365
 Phe Lys Asp Ile Glu Asp Asn Ile Asp Asn Thr Gly Glu Arg Leu Thr
 370 375 380
 Tyr Trp Asp Asn Phe Gly Leu Leu Ser Gly Thr Val Gly Val Leu Leu
 385 390 395 400

UAB17404.ST25.txt

Val Leu Met Glu Tyr Cys Asn Ile Val Asn Ala Gly Lys Ile Ala Glu
405 410 415

Trp Asn Lys Ile Phe Leu Leu Thr
420

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<211> 188
<212> PRT
<213> Streptococcus mutans

<400> 9

Met Glu Glu Gln Asn Ile Glu Lys Lys Ile Leu Leu Cys Leu Thr Gly
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Ser Gly Ala Leu Leu Gly Ile Ala Glu Tyr Ile Thr Phe Leu Thr Val
20 25 30

Arg Phe Lys His Val Arg Val Ile Val Ser Asp Asn Ala Ala Lys Met
35 40 45

Leu Pro Val Ala Ala Ile Thr Gln Leu Cys Glu Lys Val Tyr Thr Asp
50 55 60

Glu Val Ser Phe Thr Asp Lys Gln Lys Asn His Ile Ala Leu Thr Arg
65 70 75 80

Trp Ala Asp Ile Thr Val Val Leu Pro Ala Thr Ala Asn Ile Ile Gly
85 90 95

Lys Val Ala Asn Gly Ile Ala Asp Asn Phe Met Thr Thr Thr Leu Leu
100 105 110

Ser Ser Ser Lys Pro Val Leu Ile Tyr Pro Cys Met Asn Asn Ile Met
115 120 125

Trp Glu Asn Pro Val Val Gln Lys Asn Val Glu Val Leu Ser Gly Thr
130 135 140

Gln Tyr Lys Val Ile Val Gly Gln Glu Ser Glu Ser Phe Glu Leu Ala
145 150 155 160

Ser Gly Lys Met Lys Lys Asn Ile Ala Ile Pro Ser Leu Asp Glu Leu
165 170 175

Gln Arg Val Val Leu Glu Asn Leu Gln Glu Glu Arg
180 185

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 <212> PRT
 <213> Streptococcus mutans

<400> 10

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 20 25 30

Ser Glu Gln Thr Val Asn Asp Leu Asn Asn Leu Gly Val Thr Val Asn
 35 40 45

Ser His Ile Ala Glu Ile Gly Tyr Ile Glu Ala Gln Gly Asp Val Asn
 50 55 60

Ile Asp Gln Ile Lys Lys Leu Ser Asn Ile Gln Ser Ile Gln Asn Met
 65 70 75 80

Ala Asp Thr Ser Gln Asn Ile Thr Thr Arg Val Pro Ser Thr Tyr Ile
 85 90 95

Asn Gln Thr Ile Gln Leu Pro Gln Leu Phe Ser Tyr Gln Trp Asp Met
 100 105 110

Gln Lys Ile Thr Asn Asn Gly Val Ser Tyr Ser Leu Asn Lys Glu Asn
 115 120 125

Arg Lys Asn Val Thr Val Ala Leu Val Asp Ser Gly Ile Asp Val Asp
 130 135 140

His Asn Ala Phe Thr Gly Met Ile Asp Ser Arg Ser Lys Asn Phe Val
 145 150 155 160

Pro Ala Gly Gly Tyr Asp Asn Ser Glu Ser Ser Glu Thr Gly Asn Ile
 165 170 175

Asn Asp Ile Asp Asp Lys Lys Gly His Gly Thr Ala Val Ala Gly Gln
 180 185 190

Ile Ala Ala Asn Gly Gln Ile Phe Gly Val Ser Pro Gly Thr Asn Leu
 195 200 205

Leu Ile Tyr Arg Val Phe Gly Lys Ser Lys Ser Lys Glu Cys Trp Ile
 210 215 220

UAB17404.ST25.txt

Leu Lys Ala Ile Ile Asp Ala Thr Asn Asn Gly Ala Asn Val Ile Asn
225 230 235 240

Leu Ser Leu Gly Gln Tyr Ile Lys Ile Pro Asn Gly Asp Ile Trp Glu
245 250 255

Ser Ala Glu Ala Leu Gly Tyr Lys Phe Ala Ile Asp Tyr Ala Thr Arg
260 265 270

His Asn Val Ile Val Val Ala Ala Thr Gly Asn Asp Gly Leu Ser Asp
275 280 285

Asp Asn Gly Glu Val Lys Thr Tyr Tyr Asn Ser Gln His Ser Gly Gln
290 295 300

Asp Met Ser Gln Asn Asp Thr Val Glu Asp Tyr Pro Ser Val Leu Pro
305 310 315 320

Asn Ala Ile Ala Val Gly Ser Ser Asp Asn Asn Asn Gln Arg Ser Ser
325 330 335

Phe Ser Asn Tyr Tyr Asn Gln Tyr Gln Asp Asn Phe Ile Leu Ala Pro
340 345 350

Gly Gly Gly Thr Thr Leu Leu Asp Gln Tyr Gly Gln Glu Glu Trp Tyr
355 360 365

Asn Gln Lys Leu Phe Met Lys Glu Gln Val Leu Ser Thr Ser Asn Asn
370 375 380

Gly Asn Tyr Asp Tyr Ala Asp Gly Thr Ser Ile Ser Thr Gly Lys Val
385 390 395 400

Ser Gly Glu Leu Ala Glu Ile Ile Ser Asn Tyr His Leu Gln Gly Asp
405 410 415

Ser Ser Lys Ala Arg Ser Ile Leu Leu Asn Gln Val Asn Tyr Thr Ser
420 425 430

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435 440 445

<210> 11
<211> 541
<212> PRT
<213> Streptococcus mutans

<400> 11

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Arg Ile Thr Tyr Leu Leu Lys Asn Leu Val Asp Ser Lys Ser Ser Phe
35      40      45

Asn Asn Leu Phe Leu Phe Leu Val Leu Gly Leu Val Leu Phe Ile Ile
50      55      60

Asp Ala Gly Ser Gln Tyr Leu Ile Ser Leu Ile Gly Asn Gln Val Val
65      70      75      80

Phe Asn Ser Arg Asn Asn Ile Trp Lys Lys Ile Ser Asp Trp Thr Asp
85      90      95

Ser Lys Asp Asp Ser Ser Glu Met Ala Gly His Leu Ile Asn Asp Ser
100     105     110

Glu Leu Ile Glu Asn Phe Ile Ile Ser Thr Ile Pro Gln Ser Ile Asn
115     120     125

Ser Val Ile Val Gly Ser Gly Ser Leu Val Met Leu Phe Val Ile Asn
130     135     140

Ser Lys Met Ser Leu Glu Val Ile Gly Ile Cys Leu Leu Leu Leu Phe
145     150     155     160

Ile Met Gln Pro Phe Ser Arg Ile Leu Ser Lys Ile Ser Lys Arg Ile
165     170     175

Gln Glu Asp Lys Ala Glu Leu Ile Asn Ile Ala Ser Gln Leu Arg Gly
180     185     190

Gln Val Lys Thr Ile Lys Ser Tyr Asn Ala Gln Asp Tyr Ala Phe Gln
195     200     205

Lys Phe Asp Glu Gln Asn Arg Gln Leu Phe Gln Asp Ile Leu Asn Arg
210     215     220

Ile Lys Ile Phe Ser Ile Tyr Ser Pro Phe Leu Asn Ile Leu Ile Leu
225     230     235     240

Phe Met Ile Ile Ile Val Val Trp Leu Gly Asn Thr Glu Val Arg Ser

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245

255

Gly Asn Leu Thr Val Gly Ser Ala Thr Ile Phe Val Val Tyr Met Thr
260 265 270

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275 280 285

Gly Met Leu Asn Gly Gly Val Glu Arg Leu Leu Glu Tyr Asn Gln Ala
290 300

Ile Pro Glu Lys Asn Gly Ile Lys Lys Ile Asp Glu Ile Ile Asn Ile
305 310 315 320

Ala Phe Asp Asn Val Ser Phe Ala Tyr Asp Asn Gln Glu Asn Ile Ile
325 330 335

Glu Asn Val Asn Leu Thr Phe Gln Lys Gly Thr Tyr Ile Ser Ile Val
340 345 350

Gly Glu Ser Gly Val Gly Lys Ser Thr Leu Leu Asp Leu Leu Glu His
355 360 365

Asn Tyr Val Pro Ser Lys Gly Arg Ile Leu Ile Asn Gly Ile Asp Leu
370 375 380

Glu Glu Leu Asn Ile Lys Thr Leu Arg Asn Lys Ile Ser Tyr Val Ser
385 390 395 400

Gln Glu Pro Thr Ile Leu Ser Gly Thr Ile Arg Glu Leu Leu Asp Phe
405 410 415

Asn Gln Gln Gln His Thr Glu Thr Ser Leu Trp Asn Val Leu Asp Thr
420 425 430

Val Glu Leu Ser Glu Leu Ile Arg Asn Leu Pro Ala Lys Leu Asp Ser
435 440 445

Lys Val Asp Glu Tyr Gly Gly Asn Leu Ser Gly Gly Gln Met Gln Arg
450 455 460

Ile Ser Leu Ala Arg Gly Leu Leu Lys Ala Gly Asp Val Leu Leu Leu
465 470 475 480

Asp Glu Ser Phe Ala Asn Ile Asp Glu Glu Thr Cys Leu Lys Ile Lys
485 490 495

Leu Lys Ile Ala Ala Tyr Ala Glu Ser His Lys Gln Ile Val Ile Glu
500 505 510

Val Ile His Asn Leu Asn Arg Ile Thr Pro Ser Ser Ile Val Tyr Arg
515 520 525

Leu Ala Asp Lys Lys Leu Glu Ile Leu Arg Ser Gly Phe
530 535 540

<210> 12

<211> 233

<212> PRT

<213> Streptococcus mutans

<400> 12

Met Asp Tyr Met Leu Glu Thr Lys Asn Leu Thr Lys Gln Phe Gly Lys
1 5 10 15

Gln Thr Ala Val Asn Gln Leu Asn Leu Lys Val Glu Arg His Ser Ile
20 25 30

Tyr Gly Leu Leu Gly Pro Asn Gly Ser Gly Lys Ser Thr Thr Leu Lys
35 40 45

Met Ile Thr Gly Met Leu Arg Lys Thr Ser Gly His Ile Leu Ile Asp
50 55 60

Gly His Asp Trp Ser Arg Lys Asp Leu Glu Asn Ile Gly Ala Leu Ile
65 70 75 80

Glu Ser Pro Pro Leu Tyr Glu Asn Leu Thr Ala Arg Glu Asn Leu Lys
85 90 95

Val Arg Thr Leu Met Leu Gly Leu Pro Asp Ser Arg Ile Asp Glu Val
100 105 110

Leu Lys Ile Val Asp Leu Thr Asn Thr Gly Lys Lys Arg Ala Gly Gln
115 120 125

Phe Ser Met Gly Met Lys Gln Arg Leu Gly Ile Ala Ile Ala Leu Leu
130 135 140

Asn Ser Pro Gln Leu Leu Ile Leu Asp Glu Pro Thr Asn Gly Leu Asp
145 150 155 160

Pro Ile Gly Ile Gln Glu Leu Arg Asn Leu Ile Arg Ser Phe Pro Thr
165 170 175

Gln Gly Ile Thr Val Ile Ile Ser Ser His Ile Leu Ser Glu Ile Gln
180 185 190

Met Thr Ala Asp His Ile Gly Ile Ile Ala Asn Gly Val Leu Gly Tyr
195 200 205

Gln Asp Arg Ile His Gln Asp Glu Asp Leu Glu Lys Leu Phe Thr Asp
210 215 220

Val Val Met Arg Tyr Arg Gly Gly Glu
225 230

<210> 13
<211> 251
<212> PRT
<213> Streptococcus mutans

<400> 13

Met Leu Gly Met Phe Gln Ala Glu Arg Leu Lys Leu Lys Arg Ser Met
1 5 10 15

Ala Lys Lys Leu Leu Val Phe Ala Pro Ile Ile Ala Ile Leu Tyr Gly
20 25 30

Phe Ile Ala Pro Val Gly Tyr Leu Val Asn Asn Ala Tyr Asn Trp Trp
35 40 45

Tyr Val Met Ile Phe Pro Gly Leu Leu Thr Leu Phe Ala Ala Leu Ile
50 55 60

Asn Thr Tyr Glu Glu Lys Lys Leu His Tyr Arg Ala Val Phe Pro Leu
65 70 75 80

Pro Ile Ser Leu Arg Lys Phe Trp Phe Glu Lys Ile Phe Ile Thr Val
85 90 95

Tyr Tyr Leu Asn Phe Ser Asn Gly Val Leu Trp Ile Ile Thr Val Leu
100 105 110

Leu Asn Thr Phe Ile Leu Pro Asn Tyr Gly Lys Asp Tyr Thr Tyr Thr
115 120 125

Val Gly Glu Leu Ala Leu Ala Ser Leu Val Ile Ile Val Thr Thr Leu
130 135 140

Trp Gln Ile Pro Phe Cys Leu Trp Leu Thr Lys Arg Ile Gly Phe Thr
145 150 155 160

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Ile Thr Leu Ile Ile Asn Leu Met Ser Asn Phe Ile Leu Gly Val Val
165 170 175

Phe Ala Thr Thr Ser Cys Trp Trp Leu Cys Pro Tyr Ser Trp Gly Ile
180 185 190

Arg Leu Met Val Pro Ile Leu Lys Ile Leu Pro Ser Gly Leu Lys Ala
195 200 205

Gly Ile Ala Gly Ala Pro Ser Leu Pro Thr Ser Phe Trp Ser Ile Val
210 215 220

Ile Ser Leu Cys Leu Ala Val Ile Leu Phe Val Ser Leu Thr Val Leu
225 230 235 240

Ser Ala Ser Trp Phe Glu Lys Gln Glu Val Lys
245 250

<210> 14
<211> 246
<212> PRT
<213> Streptococcus mutans
<400> 14

Met Ile Asp Leu Leu Lys Ala Glu Asn Val Lys Tyr Arg His Thr Phe
1 5 10 15

Leu Pro Trp Leu His Leu Ile Leu Pro Val Thr Thr Ala Ile Val Val
20 25 30

Ile Val Tyr Gly Leu Met Thr Pro Thr His Ser Trp Ala Asp Ile Thr
35 40 45

Gly Gly Tyr Leu Glu Leu Leu Gly Ile Ser Phe Pro Ile Val Ile Ala
50 55 60

Val Ile Cys Gly Lys Ser Val Gly Leu Glu Val Glu Ala Gly Gln Phe
65 70 75 80

Gln Val Met Leu Ala Ile Lys Gln Arg Asn Leu Ile Phe Cys Ile Lys
85 90 95

Leu Leu Asn Leu Leu Ile Leu Glu Leu Phe Ser Thr Leu Leu Ala Ile
100 105 110

Gly Ile Tyr Gly Leu Ile Tyr Gln Leu Ser Asn Lys His Leu Ile Phe
115 120 125

Tyr Gly Tyr Ala Val Ile Leu Leu Thr Ala Ser Met Leu Ile Leu Tyr
 130 135 140

Leu Ile His Leu Val Val Val Phe Leu Phe Gly Asn Ser Ala Asn Ile
 145 150 155 160

Gly Leu Gly Ile Ala Glu Ser Leu Leu Ser Ala Leu Leu Leu Thr Gly
 165 170 175

Leu Gly Asp Gly Ile Trp Gln Phe Ile Pro Cys Ala Trp Gly Thr Arg
 180 185 190

Leu Met Gly Thr Leu Ile Asn Leu Trp Tyr Tyr Ser Gly His Ser Leu
 195 200 205

Phe Phe Lys Gln Gln Leu Leu Ile Trp Leu Glu Val Ala Val Pro Leu
 210 215 220

Thr Leu Met Ala Leu Ile Leu Ser Ile Ile Trp Phe Asp Arg Trp Gln
 225 230 235 240

Gly Arg Ser Ser Asp Glu
 245

<210> 15
 <211> 246
 <212> PRT
 <213> Streptococcus mutans

<400> 15

Met Thr Tyr Ile Gly Val Ser His Leu Lys Lys Val Tyr Lys Thr Gln
 1 5 10 15

Glu Gly Leu Thr Asn Glu Ala Leu Lys Asp Ile Thr Phe Ser Val Gln
 20 25 30

Glu Gly Glu Phe Ile Ala Ile Met Gly Glu Ser Gly Ser Gly Lys Ser
 35 40 45

Thr Leu Leu Asn Ile Leu Ala Cys Met Asp Tyr Pro Ser Ser Gly His
 50 55 60

Ile Ile Phe Asn Asn Tyr Gln Leu Glu Lys Val Lys Asp Glu Glu Ala
 65 70 75 80

Ala Val Phe Arg Ser Arg His Ile Gly Phe Ile Phe Gln Asn Phe Asn
 85 90 95

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Leu Leu Asn Ile Phe Asn Asn Lys Asp Asn Leu Leu Ile Pro Val Ile
100 105 110

Ile Ser Gly Ser Lys Val Asn Ser Tyr Glu Lys Arg Leu Arg Asp Leu
115 120 125

Ala Ala Val Val Gly Ile Glu Ser Leu Leu Ser Lys Tyr Pro Tyr Glu
130 135 140

Leu Ser Gly Gly Gln Gln Gln Arg Leu Ala Ile Ala Arg Ala Leu Ile
145 150 155 160

Met Asn Pro Asp Leu Ile Leu Ala Asp Glu Pro Thr Gly Gln Leu Asp
165 170 175

Ser Lys Thr Ser Gln Arg Ile Leu Asn Leu Leu Ser Asn Ile Asn Ala
180 185 190

Lys Arg Lys Thr Ile Leu Met Val Thr His Ser Pro Lys Ala Ala Ser
195 200 205

Tyr Ala Asn Arg Val Leu Phe Ile Lys Asp Gly Val Ile Phe Asn Gln
210 215 220

Leu Val Arg Gly Cys Lys Ser Arg Glu Gly Phe Leu Asp Gln Ile Ile
225 230 235 240

Met Ala Gln Ala Ser Leu
245

<210> 16
<211> 640
<212> PRT
<213> Streptococcus mutans

<400> 16

Met Phe Leu Pro Lys Ile Ser Phe His Asn Leu Ile Val Asn Lys Ser
1 5 10 15

Leu Thr Leu Pro Tyr Phe Ala Ile Met Thr Ile Phe Ser Gly Phe Asn
20 25 30

Tyr Val Leu Ile Asn Phe Leu Thr Asn Pro Ser Phe Tyr Asn Ile Pro
35 40 45

Thr Ala Arg Ile Leu Ile Asp Ile Leu Ile Phe Gly Phe Ile Leu Ile
50 55 60

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Ser Leu Leu Met Leu Leu Tyr Gly Arg Tyr Ala Asn Arg Phe Ile Ser
 65 70 75 80
 Asp Glu Arg Asn Ser Asn Met Gly Ile Phe Leu Met Leu Gly Met Gly
 85 90 95
 Lys Lys Gln Leu Leu Lys Ile Ile Tyr Leu Glu Lys Leu Tyr Leu Phe
 100 105 110
 Thr Gly Thr Phe Phe Gly Gly Leu Ile Phe Gly Phe Val Tyr Ser Lys
 115 120 125
 Ile Phe Phe Leu Phe Ile Arg Asn Leu Ile Val Ile Gly Asp Val Arg
 130 135 140
 Glu Gln Tyr Ser Leu Thr Ala Ile Ser Trp Leu Leu Ile Leu Thr Phe
 145 150 155 160
 Phe Ile Tyr Phe Ile Ile Tyr Leu Ser Glu Tyr Arg Leu Leu Lys Arg
 165 170 175
 Gln Ser Ile Thr Val Ile Phe Asn Ser Lys Ala Lys Arg Asp Asn Pro
 180 185 190
 Arg Lys Thr Ser Val Phe Val Gly Leu Phe Gly Leu Phe Ala Leu Leu
 195 200 205
 Met Gly Tyr His Phe Ala Leu Thr Ser Pro Asn Val Thr Thr Ser Phe
 210 215 220
 Ser Arg Phe Ile Tyr Ala Ala Cys Leu Val Thr Leu Gly Ile Phe Cys
 225 230 235 240
 Thr Phe Ser Ser Gly Val Ile Met Leu Leu Thr Val Ile Lys Lys Arg
 245 250 255
 Arg Ala Ile Tyr Tyr Asn Gln Arg Arg Phe Val Val Ile Ala Ser Leu
 260 265 270
 Phe His Arg Ile Arg Ser Asn Ala Leu Ser Leu Ala Thr Ile Cys Ile
 275 280 285
 Phe Ser Thr Ala Thr Leu Val Ser Leu Ser Val Leu Ala Ser Leu Tyr
 290 295 300
 Leu Ala Lys Asp Asn Met Val Arg Leu Ser Ser Pro Arg Asp Val Thr
 305 310 315 320

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Val Leu Ser Thr Thr Asp Ile Glu Pro Asn Leu Met Asp Ile Ala Thr
 325 330 335
 Lys Asn His Val Thr Leu Thr Asn Arg Gln Asn Leu Lys Val Ser Gln
 340 345 350
 Ser Val Tyr Gly Asn Ile Lys Gly Ser His Leu Ser Val Asp Pro Asn
 355 360 365
 Gly Gly Met Ala Asn Asp Tyr Gln Ile Thr Val Ile Ser Leu Asp Ser
 370 375 380
 Phe Asn Ala Ser Asn Asn Thr His Tyr Arg Leu Lys Asn His Glu Ile
 385 390 395 400
 Leu Thr Tyr Val Ser Asn Gly Ala Ala Ala Pro Ser Ser Tyr Thr Thr
 405 410 415
 Asn Gly Val Lys Leu Thr Asn Val Lys Gln Ile Lys Arg Ile Asn Phe
 420 425 430
 Ile Phe Ser Pro Leu Arg Ser Met Gln Pro Asn Phe Phe Ile Ile Thr
 435 440 445
 Asp Asn Arg Glu Ile Ile Gln Thr Ile Leu Lys Glu Glu Leu Thr Trp
 450 455 460
 Gly Thr Met Ala Gly Tyr His Val Lys Gly Lys Lys Met Asn Gln Lys
 465 470 475 480
 Asp Phe Tyr Asp Glu Leu Glu Thr Thr Asn Phe Arg Gln Phe Ser Ala
 485 490 495
 Asn Val Val Ser Ile Arg Gln Val Lys Ser Met Phe Asn Ala Leu Phe
 500 505 510
 Gly Gly Leu Leu Phe Val Gly Ile Ile Phe Gly Thr Ile Phe Ala Ile
 515 520 525
 Leu Thr Ala Ile Thr Ile Tyr Tyr Gln Gln Leu Ser Glu Gly Ile Arg
 530 535 540
 Asp Arg Asp Asp Tyr Lys Ala Met Ile Lys Leu Gly Met Thr Asn Lys
 545 550 555 560
 Thr Ile Gln Asp Ser Ile Lys Val Gln Ile Asn Phe Val Phe Ile Leu
 565 570 575

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Pro Ile Ala Phe Ala Leu Leu Asn Leu Ile Phe Ala Leu Pro Ile Leu
580 585 590

Tyr Lys Ile Met Thr Thr Phe Gly Phe Asn Asp Ala Gly Leu Phe Leu
595 600 605

Arg Ala Val Gly Thr Cys Leu Ile Val Tyr Leu Phe Phe Tyr Trp Phe
610 615 620

Ile Cys His Cys Thr Ser Lys Leu Tyr Tyr Arg Leu Ile Ser Lys Lys
625 630 635 640

<210> 17
<211> 118
<212> PRT
<213> Streptococcus mutans

<400> 17

Met Arg Ile Val Ser Ser Leu Val Ser Leu Leu Leu Thr Ile Phe Trp
1 5 10 15

Ile Phe Ala Ile Ala Phe Ile Pro Ile Gly Asp Gln Asn Ser Phe Asn
20 25 30

Lys Pro Glu Met Trp Phe Phe Val Phe Phe Ala Ile Ile Ile Tyr Ser
35 40 45

Ile Val Ile Ile Ser Asp Tyr Tyr Leu Lys Ser Phe Asn Leu Leu Lys
50 55 60

Val Tyr Gln Ile Leu Val Leu Phe Ile Ser Ile Leu Cys Ala Leu Cys
65 70 75 80

Gly Leu Ser Leu Thr Ala Leu Gly Leu Lys Val Phe Thr Leu Ala Ile
85 90 95

Gly Ile Val Ser Leu Val Asn Thr Ile Ile Tyr Phe Phe Phe Ala Asn
100 105 110

Lys Lys Asp Asn Val Glu
115

<210> 18
<211> 63
<212> PRT
<213> Streptococcus mutans

<400> 18

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Met Ser Asn Thr Gln Leu Leu Glu Val Leu Gly Thr Glu Thr Phe Asp
1 5 10 15

Val Gln Glu Asp Leu Phe Ala Phe Asp Thr Thr Asp Thr Thr Ile Val
20 25 30

Ala Ser Asn Asp Asp Pro Asp Thr Arg Phe Lys Ser Leu Ser Leu Cys
35 40 45

Thr Pro Gly Cys Ala Arg Thr Gly Ser Phe Asn Ser Tyr Cys Cys
50 55 60

<210> 19

<211> 51

<212> PRT

<213> Streptococcus epidermis

<400> 19

Met Glu Ala Val Lys Glu Asn Asp Leu Phe Asn Leu Asp Val Lys Val
1 5 10 15

Asn Ala Lys Glu Ser Asn Asp Ser Gly Ala Glu Pro Arg Ile Ala Ser
20 25 30

Lys Phe Ile Cys Thr Pro Gly Cys Ala Lys Thr Gly Ser Phe Asn Ser
35 40 45

Tyr Cys Cys
50